

RoHS Compliant  
Pb - Lead Free

Ltr	Revisions	Date	Appr

**Electrical Specifications:**

Frequency Range		3.200 to 70.000	MHz
Mode of Oscillation	Fundamental	3.200 to 32.768	MHZ
	Third Overtone	24.576 to 70.000	
Frequency Tolerance at 25°C	Standard	±30	PPM Max
	Optional	±25	
		±20	
		±15	
		±10	
Frequency Stability over Temperature Range	Standard	±50	PPM Max
	Optional	±30	
		±25	
		±20	
		±15	
Operating Temperature Range	Standard	-20 to +70	° C
	Extended	-40 to +85	
Storage Temperature Range		-55 to +125	
Aging		±5 first year ±3 thereafter	PPM Max/Year
Load Capacitance		10 to 32 and Series Resonance	pF
Shunt Capacitance		7.0	pF Max
Equivalent Series Resistance (ESR)		See ESR Table	Ohms
Drive Level		1.0	mW Max
Insulation Resistance		500 at 100 Vdc ± 15 Vdc	M Ohm



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All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

Page: 1/4 Date: April 30, 2006

Specification Title:

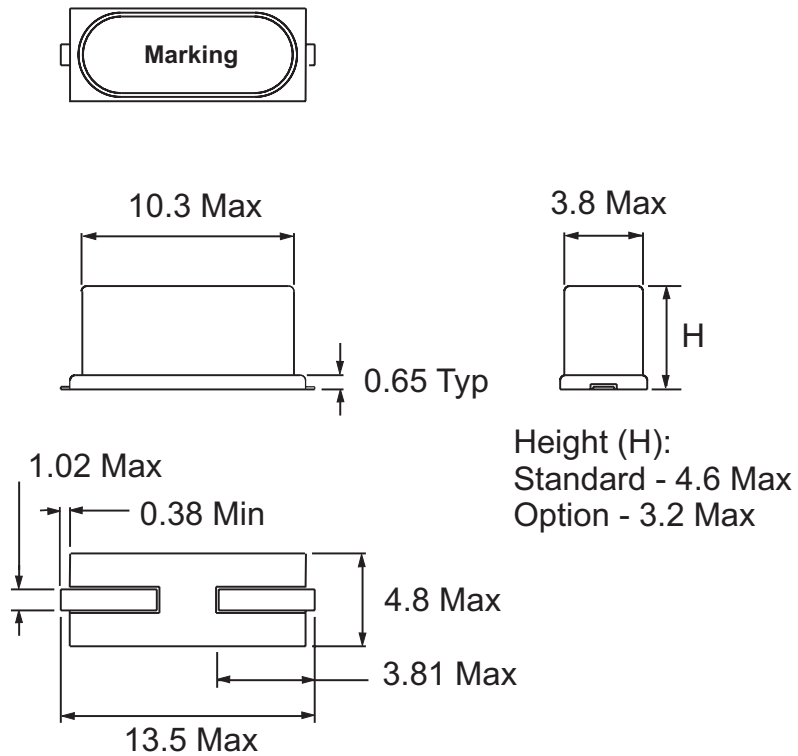
**Quartz Crystal  
Surface Mount  
HC-49/U-S SMD Package  
General Product Specification**

Part Number: **CAA Series**

**Frequency Range vs. ESR Values:**

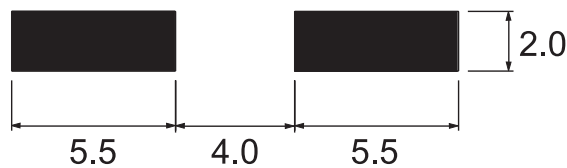
Frequency Range in MHz	ESR Ohms Max	Mode of Operation
3.200 to 3.500	300	Fundamental
3.510 to 3.999	200	Fundamental
4.000 to 5.999	120	Fundamental
6.000 to 7.999	80	Fundamental
8.000 to 9.999	60	Fundamental
10.000 to 15.999	50	Fundamental
16.000 to 32.768	40	Fundamental
24.576 to 70.000	80	Fundamental-Third Overtone

**Mechanical Outline:**

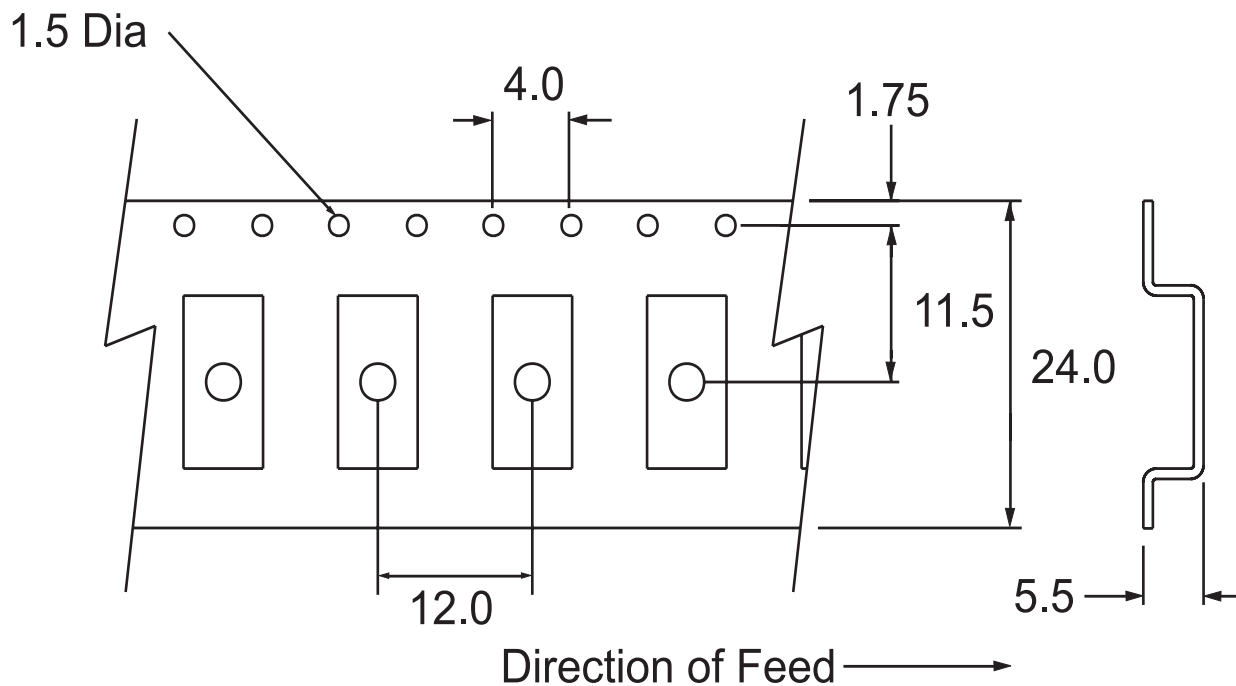


**Dimensions are millimeters.**

**PCB Solder Pad Layout:**

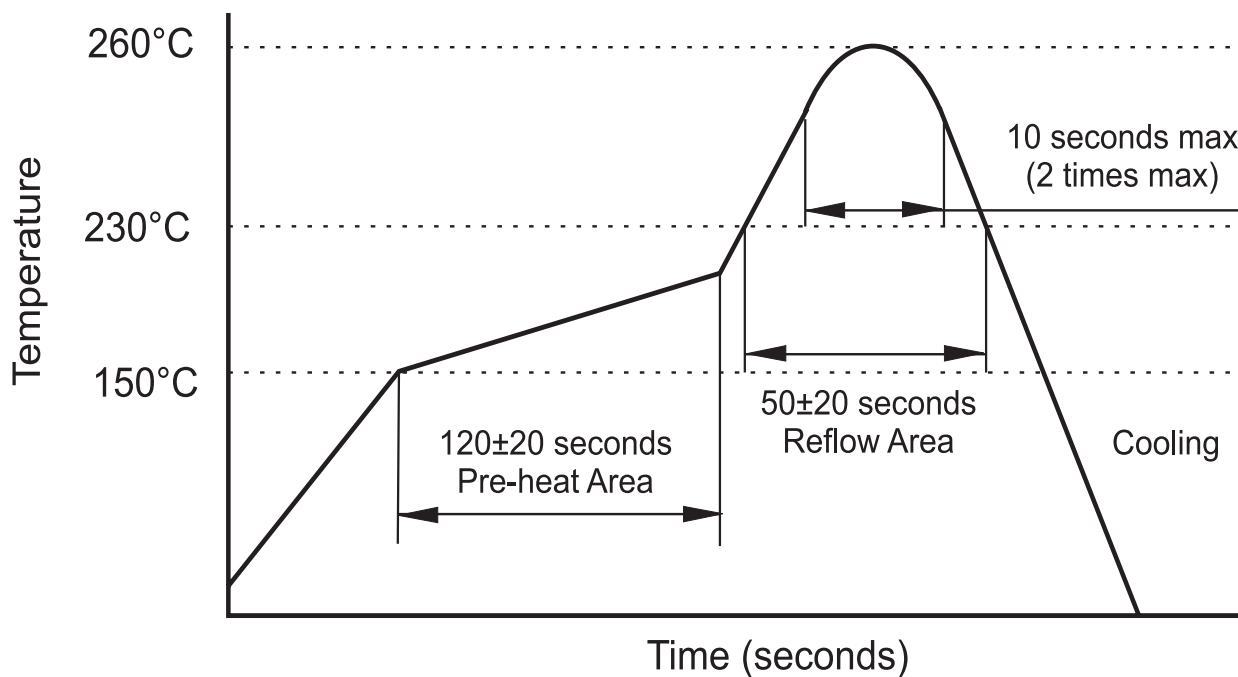


**Carrier Tape Dimensions:**



Dimensions are millimeters.

**Solder Reflow Characteristics:**



### How to build a Part Number:

Series		C	Parameter
Package		AA	HC-49/U-S SMD
		-	
Frequency		3.200 to 70.000	MHz
		-	
Load Capacitance		10	10 pF
		12	12 pF
		16	16 pF
		18	18 pF
		20	20 pF
		32	32 pF
		S	Series
		-	
Frequency Tolerance	Standard	30	±30 PPM
	Option	25	±25 PPM
		20	±20 PPM
		15	± 15 PPM
		10	±10 PPM
Frequency Stability	Standard	50	±50 PPM
	Option	30	±30 PPM
		25	±25 PPM
		20	±20 PPM
		15	±15 PPM
		10	±10 PPM
		-	
Mode of Oscillation		See Notes	Fundamental
		3	Third Overtone
		-	
Temperature Range	Standard	See Notes	-20 to +70 °C
	Option	X	-40 to +85 °C
		-	
Package Height	Standard	See Notes	4.6
	Option	32	3.2
		-	
Packaging		See Notes	Bulk
		R	Tape and Reel

#### Part Number Example:

**CAA-24.000-18-3050-R**

**CAA: HC-49/U-S SMD Package**

**24.000 MHz Nominal Frequency**

**18pF Load Capacitance**

**3050: ±30 PPM Tolerance and ±50 PPM Stability**

**Fundamental Mode**

**-20 to +70°C Temperature Range**

**Standard Height - 4.6 mm**

**R: Tape and Reel Packaging**

#### Notes:

- 1- Standard Temperature Range, Package Height (4.6mm), and Fundamental Mode do not need to be included in Part Number description.
- 2- Product is shipped in Tape and Reel configuration. Each reel contains 1000 pieces.
- 4- Quantities less than 1000 are shipped bulk. 100 pieces in ESD bags.
- 5- Specification subject to change without notice.